Attorney Docket No.: Q76524

U.S. Application No.: 10/616,916

REMARKS

Claims 1-16 are all the claims pending in the application. Of these, claims 2 and 4-16 are

withdrawn from consideration.

Claim 1 is amended herein to recite that the polyalkylene glycol has a weight-average

molecular weight of from 450,000 to 1,000,000 and by adding the recitation of "wherein the

aqueous dispersion type pressure-sensitive adhesive composition has a property that when a

pressure-sensitive adhesive product having a pressure-sensitive layer formed from the aqueous

dispersion type pressure-sensitive adhesive composition is produced, the dewy or wet surface

adhesive force thereof is 0.5 N/18 mm or more." The Amendment is supported by the results of

the working examples of the present application as described in Table 1 and the paragraph

bridging pages 16-17 of the specification as originally filed. No new matter is presented.

I. Response to Rejection

Claims 1 and 3 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by or,

in the alternative, 35 U.S.C. § 103(a) as allegedly being unpatentable over Iijima et al or

Rosenski et al.

Applicants respectfully traverse the rejections based on the following.

A. Regarding Iijima et al

The present invention is directed to an adhesive composition consisting essentially of a

polyalkylene glycol having a weight-average molecular weight of from 450,000 to 1,000,000 in a

specific amount of an acrylic polymer which excludes the adhesive composition of lijima

containing a low-molecular weight polyethylene glycol and polypropylene glycol, for example,

as essential components. To demonstrate that such components in the amount taught by Iijima et

al would adversely affect the basic and novel characteristics of the present invention, the

inventor has carried out a replication experiment wherein glycerol (as a water-soluble polyol) is

added in 3% by weight and the results were provided in the Supplemental Declaration filed

January 10, 2007. Further, to demonstrate that different kinds of acrylic polymers give similar

results, three kinds of acrylic polymers with different compositions were adopted in the

experiment.

In the Action dated April 11, 2007, the Examiner considered that Applicants have not

provided a one-to-one comparison of the prior art and the presently claimed method sufficient to

demonstrate the essential exclusion of the low MW polyglycol of lijima et al. The Examiner was

further of the view that the only polymer emulsion produced in Applicant's disclosure or

Declaration, "Pressure Sensitive Adhesive A", comprises a multi-stage polymer, yet the polymer

emulsion used in Comparative Experiment 2 of the Declaration is not a multi-stage polymer.

The "acrylic polymer" of the present claims are not limited to those obtained by multi-

stage polymerization. The results of the comparative experiments provided in the Supplemental

Declaration under 37 C.F.R. § 1.132 filed on January 10, 2007 demonstrate that when a water-

soluble polyol having low molecular weight (glycerin) is added despite the composition of the

"acrylic polymer", the effect of the present invention is not obtained. Even when the acrylic

polymer is prepared by multi-stage polymerization, when a water-soluble polyol having low

molecular weight (glycerin) is added thereto, those skilled in the art recognize that the effect of

the present invention cannot be obtained. Thus, it is not necessary to conduct experimentation

using a polymer prepared by multi-stage polymerization as the polymer for use in a comparative example. Moreover, Applicants are not required to compare the claimed invention with subject matter that does not exist in the prior art. Thus, replication of the closest embodiment of Iijima

et al, except for changing the amount of the polyalkylene glycol, is the proper comparison for

establishing patentability of the present claims.

The only other difference is that ammonium lauryl sulfate is used as the surfactant in Comparative Experiment 2, whereas sodium lauryl acetate is the surfactant employed in Pressure Sensitive A. However, the object of comparative experiment 2 is to conduct a comparison in the case where the composition of the acrylic polymer is the same as that in working example of the invention of the present application, and therefore the results would not vary depending upon the

surface active agent.

Further, amended claim 1 is limited to a polyalkylene glycol having a weight-average molecular weight of from 450,000 to 1,000,000, which range is not disclosed by Iijima et al with "sufficient specificity" to constitute an anticipation. Moreover, as shown in Table 1 and the Supplemental Declaration previously filed, the dewy or wet surface adhesive force in the case of using a pressure-sensitive adhesive composition of lijima et al falls well below a force of 0.5N/18 mm as presently claimed. In this regard, Applicants consider that glycerin, i.e., a water-

soluble polyol, added to each system imparts an adverse effect. Since the water-soluble polyol

<sup>1</sup> See MPEP § 716.02(e)(III) citing *In re Chapman*, 357 F.2d 418,148 USPQ 711 (CCPA 1966), holding that Applicant need not compare the claimed invention with a non-existent polymer suggested by a combination of references, as this would amount to a comparison of the results of the claimed invention with the results of the claimed invention.

has a low molecular weight, it is adsorbed on the surface of the emulsion particles, covering the

particle surface. Under such conditions, the hydrophilic component (i.e., the water-soluble

polyol) is also present on the surface of the pressure-sensitive adhesive. Thus, the moisture

brought about by dewing on the surface of the adherend is energetically stabilized at the

pressure-sensitive adhesive-adherend interface and therefore is not adsorbed into the interior of

the pressure-sensitive adhesive. In this connection, due to the presence of a water layer at the

pressure-sensitive adhesive-adherend interface, the resulting wet-surface adhesive is low. The

same conclusion can be derived from the results of Comparative Experiments 2 and 3 of the

present application.

The results of Comparative Experiments 2 and 3 of the present application show that only

in the case of a high-molecular weight poly(alkylene glycol) as defined by the present claims, the

glycol exists in an aggregated dispersed state without covering the particle surface (see Figure 1

attached to the Supplemental Declaration previously filed on January 10, 2007). Since these

portions are particularly likely to absorb water, and are not present at the surface of the pressure-

sensitive adhesive, the moisture brought about by dewing becomes energetically unstable at the

interface between the adherend and the pressure-sensitive adhesive, and is thus absorbed into the

interior of the pressure-sensitive adhesive. As a result, the water content at the interface between

the adherend and the pressure-sensitive adhesive is reduced to enhance wet-surface adhesive

force.

As previously pointed out, the present invention also differs from lijima in that, in the present invention, a specific polyalkylene glycol alone can be incorporated into a specific acrylic water dispersion type pressure-sensitive adhesive to provide the effects of the invention.

lijima describes that "when a water-soluble or water-swellable polymer alone is incorporated in an adhesive, a small moisture permeability can be imparted to the adhesive layer, but even if such a polymer is incorporated in a large quantity, an adhesive layer having a good moisture permeability cannot be obtained" (see column 2, lines 55 to 61). This passage instructs that Iijima's "polyethylene oxide with a molecular weight of 300,000 or more" or the like, which corresponds to Iijima's water-soluble or water-swellable polymer, is never used alone.

More specifically, lijima discloses that the water-soluble polyol disclosed therein contains polyethylene glycol having a molecular weight of 1,000 or less and polypropylene glycol with a molecular weight of 1,000 or less (see column 3, lines 42 to 51). In addition, Iijima discloses that the water-soluble or water-swellable polymer contains polyethylene oxide with a molecular weight of 300,000 or more (see column 3, lines 57 to 63). Surely, Iiiima's polyethylene glycol and polypropylene glycol are outside the molecular weight range of amended claim 1, i.e., from 450,000 to 1,000,000.

Regarding the difference between Iijima's polyalkylene oxide and Applicants' claimed polyalkylene glycol, Applicants comment as follows. Generally, polyalkylene oxide (polymerization of ethylene oxide) is designated as having a molecular weight larger than that of polyalkylene glycol (polymerization of ethylene glycol). Thus, Iijima's polyethylene oxide having a molecular weight exceeding 300,000 with no specified upper limit as set forth at

column 3, lines 62-63, is different from the claimed polyalkylene glycol having a molecular weight of from 450,000 to 1,000,000. That is, the molecular weight of Iijima's polyethylene

oxide with no upper limit could well be in excess of 1,000,000.

Further, although Iijima discloses that the polyethylene oxide has a molecular weight of

300,000 or more, no basis for this molecular weight range is explained by Iijima, and no such

polyethylene oxide is used in the working examples thereof, either. Thus, Iijima does not

recognize criticality in the claimed molecular weight range of from 450,000 to 1,000,000.

Moreover, lijima relates to a pressure-sensitive adhesive which is moisture permeable,

with which skin eruptions or irritation is scarcely caused. The object as well as design concept

of lijima also differ from those of the pressure-sensitive adhesive of the present invention which

simultaneously satisfies initial adhesion to already dewy surfaces and constant-load peeling

property from the beginning.

In summary, a distinct difference between the present invention and Iijima is that Iijima

essentially requires the addition of a low molecular weight water-soluble polymer. The test

results presented in the previously filed Supplemental Declaration show that the presence of the

low molecular weight water soluble-polymer of lijima adversely affects the basic and novel

characteristics of the present invention, such that the amendment to claim 1 employing the

transitional language "consisting essentially of" excludes the adhesive composition of Iijima et

al.

Another difference is that lijima does not meet the claimed adhesive force of 0.5 N/18

mm or more as shown in the test data presented in Supplemental Declaration, of record.

Furthermore, Iijima's "polyethylene oxide with a molecular weight of 300,000 or more"

does not anticipate the molecular weight range of amended claim 1, i.e., from 450,000 to

1,000,000.

Thus, in view of the above, and the test data presented in the Declaration submitted July

26, 2006 and Supplemental Declaration submitted January 10, 2007, it is respectively submitted

that the present invention is neither anticipated nor obvious over Iijima.

Regarding Rosenski et al В.

The basis for rejection was that the claimed adhesive composition is unpatentable over

the prior art adhesive composition prepared by a different process, absent evidence that the

particular process of making (i.e., whereby the polyalkylene glycol is incorporated into the

composition after polymerization of the acrylic polymer) results in a materially different product.

In paragraph 10 bridging pages 5-6 of the Office Action dated April 11, 2007, the

Examiner did not consider the Declaration evidence to be persuasive.

In response, Applicants reiterate that the present invention is distinguishable from

Rosenski et al. Claim 1 of the present invention recites that the polyalkylene glycol is

incorporated into the composition in the form of an aqueous solution after the polymerization of

the acrylic polymer, whereas in Rosenski et al addition occurs during polymerization.

Rosenski is characterized by emulsion-polymerizing monomers in the presence of a

polyalkylene oxide plasticizer, while in the present invention, polyalkylene glycol is

incorporated into the composition after polymerization. More specifically, in Example 4

(column 8), Rosenski describes that "in the case where PEG with a molecular weight of 8,000 is

added to an emulsion after polymerization, adhesive property is not imparted by the post addition

of PEG". That is, Rosenski teaches away from the present invention in that addition of a

polyalkylene oxide after polymerization in Example 4 of Rosenski sets forth an embodiment in

which the desired effect is not achieved.

In contrast, according to the present invention, the polyalkylene glycol is incorporated in

the form of an aqueous solution after the polymerization of an acrylic polymer, in order not to

adversely affect the polymerization of an acrylic polymer. Namely, incorporation of the

polyalkylene glycol in the form of an aqueous solution after polymerization of the acrylic

polymer is a significant key factor for exhibiting the effect of the present invention. Concerning

this aspect, the technique of the present invention and that of Rosenski are entirely different from

one another.

Incorporating the polyalkylene glycol after polymerization of the acrylic polymer results

in a difference in chemical structure, which difference in structure provides a composition having

properties and an effect different from that of the composition of Rosenski.

Concretely, in Rosenski, the adhesive "monomers are polymerized in the presence of a

water-soluble polyalkylene oxide polymer" (column 3, lines 54-57). That is, Rosenski uses the

polyalkylene oxide polymer as a plasticizer during the adhesive polymerization process. The

resulting polymer has a chemical structure different from that of the claimed invention where the

polyalkylene glycol is incorporated after polymerization of the acrylic polymer.

This difference in mode of addition also affects the polarization reactivity, thus resulting

in a failure to exhibit good initial adhesive force to a dewy surface as shown in the Supplemental

Declaration previously filed January 10, 2007. Regarding this last point, as discussed in further

detail below, the test data presented in the Supplemental Declaration demonstrates that Rosenski

in addition to Iijima also does not meet the claimed wet-surface adhesive force of 0.5 N/18 mm

or more as required by amended claim 1. See page 12 of the Supplemental Declaration.

With respect to the content of the previously filed comparative experiment in the

Supplemental Declaration, Applicants submit that the invention of Rosenski has been faithfully

reproduced. The Examiner considered that a one-to-one comparison of the prior art has not been

provided. However, the present invention is characterized in that polyalkylene glycol is added

after polymerization of the acrylic polymer, which is clearly different from the invention of

Rosenski where the acrylic polymer is polymerized in the presence of polyalkylene glycol. The

difference between both inventions has been demonstrated by faithfully reproducing the

invention of Rosenski and showing that the same effect (high dewy or wet surface adhesive

force) as that of the present invention can not be obtained.

As shown in the Table at page 12 of the Supplemental Declaration, the wet-surface

adhesive force of the product obtained from the replication of Example 1 of Rosenski et al

resulted in a low value. The reason is that, since polymerization is conducted under the state

where the polyoxyethylene plasticizer is incorporated, the polyoxyethylene plasticizer is

adsorbed on the particle surface. Even when the materials are fabricated into a tape, the

plasticizer is present in the surface of the pressure-sensitive adhesive, raising the hydrophilic

nature of the surface of the pressure-sensitive adhesive. Consequently, when the tape is

laminated with the wet surface of an adherend, moisture present between the adherend and the

surface of the pressure-sensitive adhesive is energetically stably. Namely, the moisture is not

absorbed into the interior of the pressure-sensitive adhesive, resulting in a low wet-surface

adhesive force.

In the present application, the objective is achieved by restricting the MW of the lower limit

of the hydrophilic polymer to 450,000, and further by adding the polymer after polymerization,

thus suppressing the migration of the hydrophilic polymer to the surface of the pressure-sensitive

adhesive.

Additionally, Rosenski does not teach the molecular weight recited in the present claims.

Rosenski teaches the use of a polyalkylene oxide plasticizer with a molecular weight of larger

than 3,000, and preferably greater than 5,000 but has no description of the molecular weight of

the acrylic polymers at all.

Still further, Rosenski relates to "a pressure-sensitive adhesive which is used for paper

products, and can be dispersed again in water when the paper product is recycled to give

regenerated pulp". Thus, Rosenski's objective as well as design concept are different from those

of the present invention which provides a pressure-sensitive adhesive simultaneously satisfying

initial adhesion to dewy surfaces and a constant-load peeling property.

Accordingly, Rosenski et al provides a different formulation for a purpose completely

different from that of the present invention, and neither anticipates nor renders obvious the

presently claimed invention.

In view of the above, Applicants submit that the present invention is neither anticipated

nor obvious over lijima et al or Rosenski et al. Accordingly, Applicants respectfully request

AMENDMENT UNDER 37 C.F.R. § 1.114(c)

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withdrawal of the rejection.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue

Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

overpayments to said Deposit Account.

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